

AMENDMENTS TO THE CLAIMS

1. (cancelled)
2. (currently amended) A method according to claim ~~[[54]]~~ 86, wherein the selection and degree of differentiation between the one or more characteristics is arranged such that areas where emboss points of the emboss pattern on the non-woven spunbonded polymer fabric are substantially in register with lamination points of the lamination pattern on the single lamination pattern calender roll are smaller than 25 mm^2 to avoid the ~~visual appearance~~ occurrence of visible un laminated patches including blistering in the form of blisters occurring in the resultant laminate.
3. (currently amended) A method according to claim ~~[[54]]~~ 86, wherein the selection and degree of differentiation between one or more characteristics is arranged to control the size of the areas in the resultant laminate containing groups of adjacent points in each of the emboss pattern on the non-woven spunbonded polymer fabric and point lamination pattern on the single lamination pattern calender roll and which are in registration, in order to avoid the visual appearance of un laminated patches occurring in the resultant laminate.
4. (currently amended) A method according to claim ~~[[54]]~~ 86, wherein the emboss points of the emboss pattern on the non-woven spunbonded polymer fabric and the lamination points of the lamination pattern on the single lamination pattern calender roll each have a respective pitch therebetween and wherein the one or more selected characteristics include the pitch between the emboss points of the emboss pattern on the non-woven spunbonded polymer fabric or lamination points of the point lamination pattern on the single lamination pattern calender roll.
5. (previously presented) A method according to claim 4, wherein the pitch of the emboss pattern on the non-woven spunbonded polymer fabric is varied with respect to the pitch of the point lamination pattern on the single lamination pattern calender roll prior to lamination.

6. (currently amended) A method according to claim [[54]] 86, wherein the calender roll has a rotational axis, wherein the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric and the lamination points of the lamination pattern each have respective axes of alignment extending at a respective angle to the rotational axis of the single lamination pattern calender roll and wherein the one or more selected characteristics include the axes of alignment of the emboss points of the emboss pattern and of the lamination points of the lamination pattern of the single lamination pattern calender roll.

7. (previously presented) A method according to claim 6, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric and of the lamination points of the lamination pattern of the single lamination pattern calender roll are orthogonal to each other.

8. (previously presented) A method according to claim 6, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric are varied with respect to the axes of the lamination points of the lamination pattern of the single lamination pattern calender roll prior to lamination.

9. (currently amended) A method according to claim [[54]] 86, wherein the one or more selected characteristics include one of the percentage bond area of the emboss pattern of the non-woven spunbonded polymer fabric and the percentage contact area of the point lamination pattern of the single lamination pattern calender roll.

10. (previously presented) A method according to claim 9, wherein the percentage bond area of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the percentage contact area of the point lamination pattern of the single lamination pattern calender roll prior to lamination.

11. (currently amended) A method according to claim [[54]] 86, wherein the one or more selected characteristics include one of the shape of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric and the shape of each lamination point of the point lamination pattern of the single lamination pattern calender roll.

12. (previously presented) A method according to claim 11, wherein the shape of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the shape of each lamination point of the lamination pattern of the single lamination pattern calender roll prior to lamination.

13. (currently amended) A method according to claim [[54]] 86, wherein the one or more selected characteristics include one of the size of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric and of the size of each lamination point of the point lamination pattern of the single lamination pattern calender roll.

14. (previously presented) A method according to claim 13, wherein the size of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the size of each lamination point of the lamination pattern on the single lamination pattern calender roll prior to lamination.

15. (cancelled)

16. (cancelled)

17. (currently amended) A method according to claim [[54]] 86, further comprising providing a thermoplastic adhesive layer between the nonwoven spunbonded polymer fabric and non-embossed polymer material during lamination.

18. (previously presented) A method according to claim 17, wherein the adhesive layer is provided as a coating on one of said nonwoven spunbonded polymer fabric and non-embossed polymer material.

19. (previously presented) A method according to claim 18, wherein the coating is substantially continuous but provides discrete adhesive bonding points between the nonwoven spunbonded polymer fabric and non-embossed polymer material at the lamination points during lamination.

20. (cancelled)

21. (currently amended) A method according to claim ~~[[20]]~~ 19, wherein the nonwoven spunbonded polymer fabric is a thermoplastic polymer and wherein the single lamination pattern calender roll is a thermobonding calender.

22. (previously presented) A method according to claim 21, including passing the thermoplastic adhesive layer and the nonwoven spunbonded thermoplastic polymer fabric through the thermobonding calender such that they are caused to melt together to form an integrated bond.

23. (previously presented) A method according to claim 22, wherein the non-embossed polymer material is a thermoplastics polymer and is also caused to melt to form part of the integrated bond.

Claims 24-29 (cancelled)

30. (currently amended) A method according to claim ~~[[54]]~~ 84, wherein the spunbonded polymer fabric comprises a polymer selected from the group consisting of polypropylene, polyethylene, polyester and polyamide.

31. (currently amended) A method according to claim [[54]] 84, wherein the non-embossed polymer material comprises a thin film.
32. (previously presented) A method according to claim 31, wherein the thin film comprises a polymer selected from the group consisting of polypropylene, polyethylene, polyester and polyamide.
33. (currently amended) A method according to claim [[54]] 84, further comprising providing a further layer between the non-woven spunbonded polymer fabric and the non-embossed polymer material.
34. (previously presented) A method according to claim 33, wherein the further layer is one of a microfibre layer and a continuous thin film.
35. (currently amended) A method according to claim [[54]] 84, wherein the single lamination pattern calender roll has a rotational axis, wherein the nonwoven spunbonded polymer fabric has oppositely facing surfaces of which a first oppositely facing surface is presented to the single lamination calender roll and has an emboss pattern which is non-symmetrical about a line transverse to the rotational axis of the single lamination pattern calender roll, and wherein the nonwoven spunbonded polymer fabric is turned over prior to lamination to present to the single lamination calender roll a second alternative oppositely facing surface with an emboss pattern having different pattern characteristics to that presented when the nonwoven spunbonded polymer fabric is not turned over.
36. (cancelled)

37. (previously presented) A method according to claim 35, wherein the turned over embossed pattern of the nonwoven spunbonded polymer fabric is sufficiently different to the non-turned over embossed pattern to provide under the same lamination process conditions a different pressure distribution across the laminate.

38. (previously presented) A method according to claim 37, wherein the difference in pressure distributions leads to perforation of the laminate when the nonwoven spunbonded polymer fabric is turned over and non-perforation when it is not turned over.

39. (withdrawn) An apparatus for laminating a first material having an emboss pattern formed thereon, to a second material, the apparatus comprising a lamination means for bonding said first and second materials together at discrete points, wherein the lamination means provides a point lamination pattern having one or more of its characteristics selected to be different to a corresponding one or more characteristics of the emboss pattern so as to control, during lamination, the amount of point mis-registration between the two patterns.

40. (withdrawn) An apparatus according to claim 39, wherein the first and second materials are continuous sheets of material and the apparatus is arranged to form a continuous laminate.

41. (withdrawn) An apparatus according to claim 40, wherein the materials are arranged as wound rolls of material and the apparatus comprises means for unwinding and flattening the materials prior to lamination.

42. (withdrawn) An apparatus according to claim 39, wherein the lamination means comprises an embossed thermobonding calendar.

43. (withdrawn) An apparatus according to claim 39, wherein the apparatus further comprises means for cooling the laminate after the lamination process.

44. (withdrawn) An apparatus according to claim 39, wherein the apparatus further comprises means for treating the laminated material with a chemical composition after the lamination process.

45. (cancelled)

46. (withdrawn) A method of laminating a first polymer material to a second material by use of a thermoplastic adhesive layer, wherein the thermoplastic adhesive layer, the first polymer material layer and the second material layer are passed through a point lamination calendar and at least the adhesive and thermobonding layer are caused to melt together at the lamination points to form respective integrated bonds.

47. (withdrawn) A method according to claim 46, wherein the second material comprises a woven fabric textile material.

48. (withdrawn) A method according to claim 46, wherein the second material comprises a thermoplastics material and is also caused to melt to form part of the integrated bond.

49. (withdrawn) A method according to claim 46, further comprising selecting the lamination conditions to melt the thermoplastic adhesive layer in a single pass through the thermobonding calendar and subsequently to cool the laminate to set the melted adhesive.

50. (withdrawn) A method according to claim 46, further comprising applying the adhesive layer as a coating to one of the first or second materials.

51. (withdrawn) A method according to claim 50, wherein the applied coating is substantially continuous but provides discreet adhesive bonding points between the first and second materials at the lamination points during the point lamination process.

52. (withdrawn) A method according to claim 46, wherein the adhesive is one or more of an acrylic adhesive, a hot melt adhesive, a netting adhesive or a powder adhesive.

53. (withdrawn) A method according to claim 46, wherein the first and/or second materials comprise discontinuous fibres which are melted by the lamination process to form a film at the adhesive lamination points.

54. (cancelled)

55. (cancelled)

56. (cancelled)

57. (currently amended) A method according to claim [[56]] 87, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric and of the lamination points of the lamination pattern of the single lamination pattern calender roll are orthogonal to each other.

58. (currently amended) A method according to claim [[56]] 87, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric are varied with respect to the axes of the lamination points of the lamination pattern of the single lamination pattern calender roll prior to lamination.

59. (currently amended) A method according to claim [[56]] 87, wherein the percentage bond area of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the percentage contact area of the point lamination pattern of the single lamination pattern calender roll prior to lamination.

60. (currently amended) A method according to claim ~~[[56]]~~ 87, wherein the shape of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the shape of each lamination point of the lamination pattern of the single lamination pattern calender roll prior to lamination.

61. (currently amended) A method according to claim ~~[[56]]~~ 87, wherein the size of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the size of each lamination point of the lamination pattern on the single lamination pattern calender roll prior to lamination.

62. (cancelled)

63. (currently amended) A method according to claim ~~[[56]]~~ 87, wherein the nonwoven spunbonded polymer fabric has oppositely facing surfaces of which a first oppositely facing surface is presented to the single lamination calender roll and has an emboss pattern which is non-symmetrical about a line transverse to the rotational axis of the single lamination pattern calender roll, and wherein the nonwoven spunbonded polymer fabric is turned over prior to lamination to present to the single lamination calender roll a second alternative oppositely facing surface with an emboss pattern having different characteristics to that presented when the nonwoven spunbonded polymer fabric is not turned over.

64. (previously presented) A method according to claim 63, wherein the turned over embossed pattern of the nonwoven spunbonded polymer fabric is sufficiently different to the non-turned over embossed pattern to provide under the same lamination process conditions a different pressure distribution across the laminate.

65. (previously presented) A method according to claim 64, wherein the difference in pressure distributions leads to perforation of the laminate when the nonwoven spunbonded polymer fabric is turned over and non-perforation when it is not turned over.

66. (withdrawn) A laminate including a first material having an emboss pattern formed thereon and a second material laminated to the first material using a point-lamination pattern in a lamination process, characterised in that the first material is a nonwoven spunbonded polymer fabric having a plurality of emboss points that are formed under heat and pressure and that form an emboss pattern, in that the second material is a non-embossed polymer material, in that the nonwoven spunbonded polymer fabric with the emboss pattern and the non-embossed polymer material are brought together and laminated to one another using a single lamination pattern calender roll of which the lamination pattern has a plurality of lamination points, and in that one or more characteristics of the two patterns is selected and differentiated in order to control, during lamination, the amount of point mis-registration between the emboss pattern on the nonwoven spunbonded polymer fabric with the lamination pattern on the single lamination pattern calender roll and thereby the occurrence of unlaminated patches in the resultant laminate.

67. (withdrawn) A laminate according to claim 66, wherein the selection and degree of differentiation between the one or more characteristics is arranged such that areas where emboss points of the emboss pattern on the non-woven spunbonded polymer fabric are substantially in register with lamination points of the lamination pattern on the single lamination pattern calender roll are smaller than 25 mm^2 to avoid the visual appearance of unlaminated patches including blistering occurring in the resultant laminate.

68. (withdrawn) A laminate according to claim 66, wherein the selection and degree of differentiation between one or more characteristics is arranged to control the size of the areas in the resultant laminate containing groups of adjacent points in each of the emboss pattern on the non-woven spunbonded polymer fabric and point lamination pattern on the single lamination

pattern calender roll and which are in registration, in order to avoid the visual appearance of unlaminated patches occurring in the resultant laminate.

69. (withdrawn) A laminate according to claim 66, wherein the emboss points of the emboss pattern on the non-woven spunbonded polymer fabric and the lamination points of the lamination pattern on the single lamination pattern calender roll each have a respective pitch therebetween and wherein the one or more selected characteristics include the pitch between the emboss points of the emboss pattern on the non-woven spunbonded polymer fabric or lamination points of the point lamination pattern on the single lamination pattern calender roll.

70. (withdrawn) A laminate according to claim 69, wherein the pitch of the emboss pattern on the non-woven spunbonded polymer fabric is varied with respect to the pitch of the point lamination pattern on the single lamination pattern calender roll prior to lamination.

71. (withdrawn) A laminate according to claim 66, wherein the calender roll has a rotational axis, wherein the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric and the lamination points of the lamination pattern each have respective axes of alignment extending at a respective angle to the rotational axis of the single lamination pattern calender roll and wherein the one or more selected characteristics include the axes of alignment of the emboss points of the emboss pattern and of the lamination points of the lamination pattern of the single lamination pattern calender roll.

72. (withdrawn) A laminate according to claim 71, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric and of the lamination points of the lamination pattern of the single lamination pattern calender roll are orthogonal to each other.

73. (withdrawn) A laminate according to claim 71, wherein the axes of alignment of the emboss points of the emboss pattern of the non-woven spunbonded polymer fabric are varied with respect to the axes of the lamination points of the lamination pattern of the single lamination pattern calender roll prior to lamination.

74. (withdrawn) A laminate according to claim 66, wherein the one or more selected characteristics include one of the percentage bond area of the emboss pattern of the non-woven spunbonded polymer fabric and the percentage contact area of the point lamination pattern of the single lamination pattern calender roll.

75. (withdrawn) A laminate according to claim 74, wherein the percentage bond area of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the percentage contact area of the point lamination pattern of the single lamination pattern calender roll prior to lamination.

76. (withdrawn) A laminate according to claim 66, wherein the one or more selected characteristics include one of the shape of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric and the shape of each lamination point of the point lamination pattern of the single lamination pattern calender roll.

77. (withdrawn) A laminate according to claim 76, wherein the shape of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the shape of each lamination point of the lamination pattern of the single lamination pattern calender roll prior to lamination.

78. (withdrawn) A laminate according to claim 66, wherein the one or more selected characteristics include one of the size of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric and the size of each lamination point of the point lamination pattern of the single lamination pattern calender roll.

79. (withdrawn) A laminate according to claim 78, wherein the size of each emboss point of the emboss pattern of the non-woven spunbonded polymer fabric is varied with respect to the size of each lamination point of the lamination pattern on the single lamination pattern calender roll prior to lamination.

80. (withdrawn) A laminate according to claim 67, wherein the nonwoven spunbonded polymer fabric has a weight of greater than or equal to 50 g/m^2 .

81. (withdrawn) A laminate according to claim 66, wherein the single lamination pattern calender roll has a rotational axis, wherein the nonwoven spunbonded polymer fabric has oppositely facing surfaces of which a first oppositely facing surface is presented to the single lamination calender roll and has an emboss pattern which is non-symmetrical about a line transverse to the rotational axis of the single lamination pattern calender roll, and wherein the nonwoven spunbonded polymer fabric is turned over prior to lamination to present to the single lamination calender roll a second alternative oppositely facing surface with an emboss pattern having different characteristics to that presented when the nonwoven spunbonded polymer fabric is not turned over.

82. (withdrawn) A laminate according to claim 81, wherein the turned over embossed pattern of the nonwoven spunbonded polymer fabric is sufficiently different to the non-turned over embossed pattern to provide under the same lamination process conditions a different pressure distribution across the laminate.

83. (withdrawn) A laminate according to claim 35, wherein the difference in pressure distributions leads to perforation of the laminate when the nonwoven spunbonded polymer fabric is turned over and non-perforation when it is not turned over.

84. (New) A method of laminating a first material to a second material to avoid unlaminated patches in the form of blisters comprising,

providing a first material comprising a nonwoven spunbonded polymer fabric with a minimum weight of approximately 50 g/m^2 and having an emboss pattern formed thereon, said emboss pattern having a plurality of emboss points, and a second material comprising a non-embossed polymer material,

bringing said first and second materials together and laminating said first and second materials to one another using a single lamination pattern calender roll, said lamination pattern having a plurality of lamination points, wherein said first material has a weight that causes unlaminated patches in the form of blisters during the lamination process if portions of said emboss points on said first material and portions of said lamination points on said calender roll are in registration, and

controlling the amount of point mis-registration between the emboss pattern on said first material and the lamination pattern on said calender roll to thereby avoid the occurrence of visible unlaminated patches in the form of blisters in the resultant laminate.

85. (New) A method according to claim 84 in which the lamination process provides a visible interference pattern in the resultant laminate.

86. (New) A method according to claim 85 in which the amount of point mis-registration is controlled by selecting and differentiating one or more characteristics of said emboss pattern and said lamination pattern.

87. (New) A method of laminating a first material to a second material to avoid unlaminated patches in the form of blisters comprising,

providing a first material comprising a nonwoven spunbonded polymer fabric with a minimum weight of approximately 50 g/m^2 and having an emboss pattern formed thereon, said emboss pattern having a plurality of emboss points, and a second material comprising a non-embossed polymer material,

bringing said first and second materials together and laminating said first and second materials to one another using a single lamination pattern calender roll, said lamination pattern having a plurality of lamination points, wherein said first material has a weight that causes unlaminated patches in the form of blisters during the lamination process if portions of said emboss points on said first material and portions of said lamination points on said calender roll are in registration, and

controlling the amount of point mis-registration between the emboss pattern on said first material and the lamination pattern on said calender roll by selecting and differentiating one or more characteristics of the two patterns to thereby avoid the occurrence of visible unlaminated patches in the form of blisters in the resultant laminate, wherein the one or more characteristics of the two patterns comprise one of:

the pitch between the emboss points of the emboss pattern on the nonwoven spunbonded polymer fabric or lamination points of the point lamination pattern on the single lamination pattern calender roll;

the axes of alignment of the emboss points of the emboss pattern of the nonwoven spunbonded polymer fabric or of the lamination points of the lamination pattern of the single lamination pattern calender roll;

the percentage bond area of the emboss pattern of the nonwoven spunbonded polymer fabric or of the lamination points of the lamination pattern of the single lamination pattern calender roll;

the shape of each emboss point of the emboss pattern of the nonwoven spunbonded polymer fabric or of each lamination point of the lamination pattern of the single lamination pattern calender roll; and

the size of each emboss point of the emboss pattern of the nonwoven spunbonded polymer fabric or of the size of each lamination point of the lamination pattern of the single lamination pattern calender roll.

88. (New) A method according to claim 87 in which the lamination process provides a visible interference pattern in the resultant laminate.